Date: Wed, 24 Nov 93 04:30:17 PST
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #121
To: Ham-Ant

Ham-Ant Digest Wed, 24 Nov 93 Volume 93 : Issue 121

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: 23 Nov 93 18:54:40 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu
Subject: Ground rod "experiment". What does it all mean?
To: ham-ant@ucsd.edu

Dr Joseph M Zawodny (zawodny@arbd0.larc.nasa.gov) wrote:

: If the potential difference is due to a galvanic potential, connecting the two
: will probably result in an accelerated oxidation of one of the ground points.

Yes, and note that boat owners put "zincs" on their hulls to reduce the
oxidation of bronze (copper) fittings. The zincs have to be replaced
occasionally, because they are eaten away. Ummm-- Pete, be careful
here, since the zinc in your system is on your (pressurized) water pipes...

73, K7ITM

Date: Tue, 23 Nov 1993 16:34:27 GMT
From: fluke!chuckb@beaver.cs.washington.edu
Subject: Match-All Tuner
To: ham-ant@ucsd.edu

In article <931122144415.21808384@engvax.picker.com>
CUNNINGHAM_A@engvax.picker.com writes:
> Anyone know how good the Match-All tuner from Terramar Systems
> works. Lots of claims for a lightweight, $99 box that goes
> between your longwire/dipole/vertical and the coax. Claims it
> automatically matches VSWR to 1.5:1 on all HF bands... And the
> thing appears to be passive (no external power ?) to boot.
> Anyone know how it works, principles of operation --- they say
> it works like the commercial product "Maxcom" ...
>
>   73s Al N8AGU / near Cleveland, Ohio
>
> CUNNINGHAM_A@engvax.picker.com
>

Yes, I know about this: it's a fraud! QST did an exposee' of the Maxcom "antenna matcher" and found that it was a 50 ohm dummy load. You get a nice VSWR reading because of the swamping resistor. But terrible performance. The MAxcom ad I saw in a Wayne Green publication cliamed that the Maxcom was "quiet." What a joke! Except it's not funny that people actually pay $300+ for a fake device.

The QST article examined the unit and found a surplus junk circuit board not connected to anything -- just in there for looks!

If you want good performance with a wire dipole on all bands, you will get the the best results with a balanced tuner or tuner with a balun and balanced feed line.

--
Chuck Bowden / WB7R / chuckb@tc.fluke.com / (206) 356-6228
Fluke Corporation / MS 232E / PO Box 9090 / Everett WA 98206-9090

Date: 23 Nov 93 19:56:17 GMT
From: ogicse!uwm.edu!vixen.cso.uiuc.edu!sdd.hp.com!col.hp.com!srgenprp!
alanb@network.ucsd.edu
Subject: My favorite BAZOOKA (+6db :-)

To: ham-ant@ucsd.edu

ddb@tntvax.ntrs.com (ddb@tntvax.ntrs.com) wrote:
: About 6 years ago I received in a QSL card plans for an antenna that looked
: interesting - a BAZOOKA. I thank who ever sent it to me (I just don't
: remember).
: These are the directions for making a form of Bazooka antenna with a
: demonstrated performance gain of 6db (or better) gain over a standard dipole.
: The radiation pattern is broadsided with nulls off the ends.

The bazooka will have 0 dB gain over a standard dipole. A half-wave dipole
is a half-wave dipole, no matter how you match it or what you make it out of.

The advantage of the bazooka is that it has (theoretically at least) wider
bandwidth than a regular dipole, supposedly due to the matching action
of the quarter-wave stubs. Years ago, I calculated what the impedance of
the stubs should be, and got a number much less than 50 ohms. I suspect
most of the improved bandwidth is due to the fact that the coax has a
larger diameter than the wire normally used for dipoles. Fatter wire
gives greater bandwidth.

One of these days, when I get time (retirement is only 20 years away!),
I would like to build a standard dipole, a bazooka, and a dipole made with
coax and compare the bandwidths.

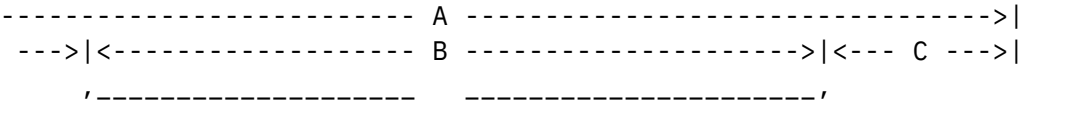
AL N1AL

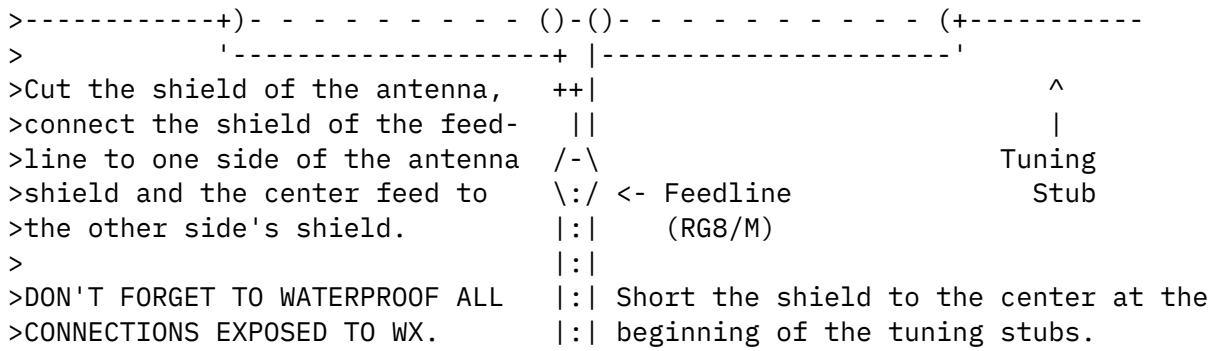
Date: 23 Nov 93 19:40:31 GMT
From: ogicse!news.tek.com!tekig7!tekig6!royle@network.ucsd.edu
Subject: My favorite BAZOOKA (+6db :-)
To: ham-ant@ucsd.edu

Sorry, I couldn't let this one go past. . .

ddb@tntvax.ntrs.com (Dan Bowker NY9K):

>About 6 years ago I received in a QSL card plans for an antenna that
>looked interesting - a BAZOOKA. I thank who ever sent it to me (I just
>don't remember).
>These are the directions for making a form of Bazooka antenna with a
>demonstrated performance gain of 6db (or better) gain over a standard
>dipole. The radiation pattern is broadsided with nulls off the ends.





>Note: One way to create the tuning stubs is to cut the cox cable to
>length A
>   and trim the shield back. (Don't forget to cut it a bit long)

>Where: (All lengths are in FEET!)
>   A = 468 / Freq

>   [more info deleted]

>I just put one up on 20m in my attic (with no tuner) and found a 4-5 S
>level jump in signals over a G5RV with a tuner.   I just wish I put it up
>before the sweepstakes!

>Dan Bowker NY9K

The only problem I have --and you should have-- with this antenna is the claimed gain figure of 6 dB over a dipole. If any of what I'm about to say is new to you or doesn't seem right, dust off your ARRL Antenna Book or other antenna textbook of your choice.

How do we get gain from an antenna? Remembering that gain is a relative measure to begin with, an antenna can have gain over another only if it radiates a stronger field with the same power input. How can it do that? Only two ways -- by having better efficiency (turning less of the input power into heat) or by concentrating the field in some directions at the expense of others. Since an ordinary half-wave dipole is generally very efficient, we're left with only the second method here. Let's see how this antenna might concentrate the field in some directions. (Note that the antenna is very nearly the same length as an ordinary half-wavelength dipole.)

Remembering that the field arises from current flowing on the antenna, and that the field is directly proportional to this current, we must have increased the current magnitude on the antenna. Why can't that be the case? If we just increased the current, the field strength would increase, all right, but the pattern would stay the same shape. If the pattern is the same shape but stronger, we're radiating more power, say 400 watts out of

the antenna for 100 watts in. Quite a trick! Just don't try to patent it -- the narrow-minded folks at the patent office simply refuse to issue patents to perpetual-motion machines. (Some antenna manufacturers, though, tend to be more broad-minded.) Ok, so we must be radically changing the current *distribution* on the antenna. And our main lobes have to be considerably narrower than those of a dipole, since we've got the same amount of total power but a stronger field in some direction(s). (By the symmetry of the antenna we know the concentration can't be vertical, so it must be horizontal.) Now we hit the problem. What kind of current distribution does it take to get this kind of pattern from a half-wavelength straight antenna? The answer is that there isn't any. Modifying the current distribution (usually done by inserting reactances at multiple places along the wire) has only a minor effect on the gain. And the antenna in question has a very nearly sinusoidal current distribution, just like an ordinary dipole. The result? A pattern just like an ordinary dipole, and gain just like an ordinary dipole.

I'd sure be interested in the setup that "demonstrated" a 6 dB performance increase over a dipole!

The comparison with a G5RV isn't surprising. On several bands, a G5RV is longer than a half wavelength, so has its maximum radiation in some direction other than broadside. On these bands, the field strength broadside to the antenna can easily be tens of dB lower than that of a dipole oriented in the same direction.

The intent of all this isn't to ridicule any type of antenna, but to try to get people thinking a little about just what it takes to get gain from an antenna, and what it means. Having a better understanding about what's going on will help you choose or create the best design for your purpose.

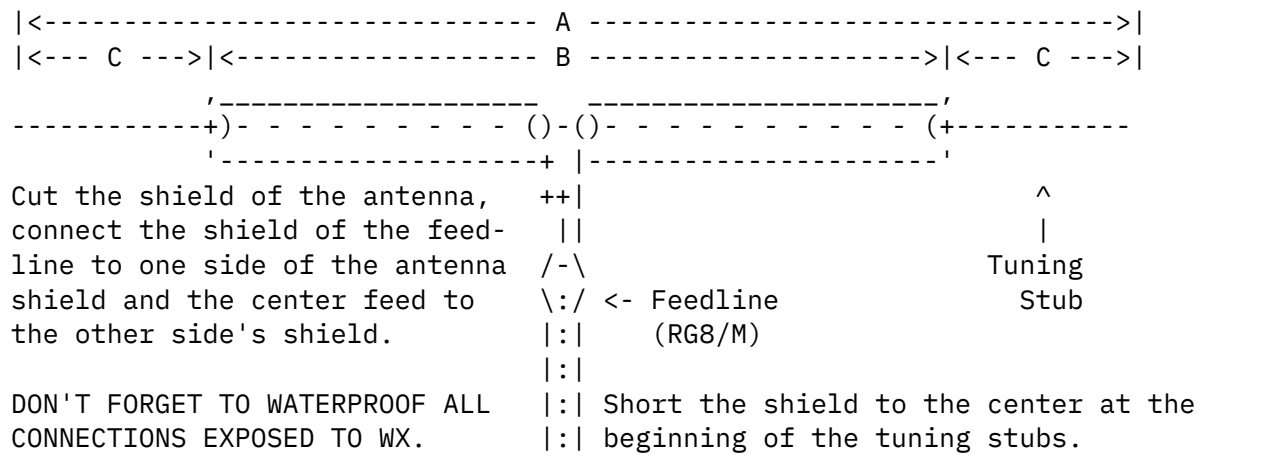
Someday I may tell you how you can get 4.6 dBd gain from an ordinary backyard dipole. . .

73,
Roy Lewallen
W7EL

Date: 22 Nov 93 21:19:29 -0700
From: swrinde!gatech!howland.reston.ans.net!mrtnt.ntrs.com!tntvax.ntrs.com!ddb@network.ucsd.edu
Subject: My favorite BAZOOKA (+6db :-)
To: ham-ant@ucsd.edu

About 6 years ago I received in a QSL card plans for an antenna that looked interesting - a BAZOOKA. I thank who ever sent it to me (I just don't

remember).
These are the directions for making a form of Bazooka antenna with a demonstrated performance gain of 6db (or better) gain over a standard dipole. The radiation pattern is broadsided with nulls off the ends.



Note: One way to create the tuning stubs is to cut the cox cable to length A and trim the shield back. (Don't forget to cut it a bit long)

Where: (All lengths are in FEET!)
A = 468 / Freq
B = 492 * Vel / Freq
C = (A-B) / 2 + some (I add about 20%)
Freq = MIddle of the band in Megahertz
Vel = Velocity factor of coax
Example: 20 Meter band (I'll use 14.200 Mhz)
RG-8M (Mini 8 Foam) Velocity factor varies from manufacturer between 75% and 80%. (I'll use 80%)
A = 468 / 14.2 = 32' 11.5"
B = 492 * 0.80 / 14.2 = 27' 8.5"
C = (32' 11.5" - 27' 8.5") / 2 = 2' 7.5" + some

The "some" is used for tuning. If the antenna is in free space then 2'7.5" for C would be really close. Since the ground will affect the length of C, I would recommend adding an ecxtra 25-50% to the tuning stubs (C) to ensure easy tuning. Put the antenna in place (ie hanging) and check the SWR at each end of the band. Increase or decrease the length of the tuning stub depending upon the SWR readings. If the SWR is lower at the lower frequencies then SHORTEN otherwise LENGTHEN the tuning stubs. Repeat the measurements and trimming until you are satisified.

The antenna should be VERY broad banded (my 15m has an swr of 1.1:1 from one end to the other). You will also find that the SWR is highly dependent upon the ground below (wet, dry, rocky...) so no two antenna installations will be the same.

I recommend that the connection at the feed point is coax to coax instead of using a connector there. Over time I have found that the connectors get loose or in 1 case the connection cracked apart (not good).

I just put one up on 20m in my attic (with no tuner) and found a 4-5 S level jump in signals over a G5RV with a tuner.   I just wish I put it up before the sweepstakes!

If you use it let me know I'm interested in your results.

Dan Bowker NY9K

P.S. I had a heck of a time (and gave up) getting one up on 10m. Let me know if you try and/or succeed.

Date: 23 Nov 1993 18:05:27 GMT
From: news.cerf.net!pagesat!olivea!charnel!yeshua.marcam.com!news.kei.com!bloom-beacon.mit.edu!noc.near.net!sunfish.hi.com!brainiac.hi.com!user@network.ucsd.edu
Subject: Need advise on AM radio ant. & reception
To: ham-ant@ucsd.edu

In article <1993Nov23.090923.28075@ke4zv.atl.ga.us>, gary@ke4zv.atl.ga.us (Gary Coffman) wrote:
> The most obvious antenna solution [for WABC 770 kHz] is the Beverage. It'll even help
> with selective fading. It should be about 2 meters off the ground,
> 3.9 km long, terminated at the far end in a 600 ohm resistor to ground,
  ^^^
that's 10 wavelengths. 390 meters will do for a Beverage, or even as little as a half-wavelength.

> and pointed endfire toward NY. That may be a problem unless you live in
> a very rural setting. :-)

Steve Byan   internet: steve@hicomb.hi.com
Hitachi Computer Products (America), Inc.
1601 Trapelo Road   phone: (617) 890-0444
Waltham, MA 02154   FAX: (617) 890-4998

Date: 23 Nov 93 19:37:13 GMT
From: world!rbarnaby@uunet.uu.net
Subject: SG230 Smart Tuner Any users out there?
To: ham-ant@ucsd.edu

Recently saw the SG230 (offered by Ham Contact in 73) when I was in
Long Beach. This was the first time I'd heard of the difference between an
Antenna Coupler and an Antenna Tuner. I heard the thing click and rattle
and come up with (supposedly) a good match. It *seems* line a good idea,
but thought I'd pose a query here to see if:
a) The difference is all hype
b) There are problems with this unit
c) It might not be worth the money ($449)

Anyone with a background in the difference between Antenna Tuner and
Antenna coupler care to respond? or anyone who owns and likes (dislikes)
the unit?

Also if anyone has pro/con reports on the SG2000 transciever as a *ham* cw/ssb
rig, I'd like to know your thoughts. Looks like a good commercial rig
to me, but doesn't seem to have *ham* in mind.
73's Richard Barnaby KD1RU rbarnaby@world.std.com
,

Date: 23 Nov 93 20:14:47 GMT
From: ogicse!uwm.edu!vixen.cso.uiuc.edu!sdd.hp.com!col.hp.com!
kenw@network.ucsd.edu
Subject: The Best UHF/VHF TV antenna
To: ham-ant@ucsd.edu

I had the chance to compare Radio Shack's top-of-the-line antenna/preamp
with Wineguard's (sp?) ant/preamp. Both were mounted about 20' above the
roof and on the same mast (A-B comparison). The Wineguard won hands down.

Note: There have been some RS preamps that (through weathering? or just
poor design?) start to self-oscillate. This has created massive
interference problems in many neighborhoods for amateur, TV, and other
radio reception.

Date: 24 Nov 93 01:04:25 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu
Subject: Tower Guy Anchors
To: ham-ant@ucsd.edu

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
: In article <CGwo59.G6G@hpcvsnz.cv.hp.com> tomb@lsid.hp.com (Tom Bruhns) writes:
: >Back to the guy anchors part of the thread: Some places it's mighty
: >hard (or expensive if you are paying someone else to do it) to get a
: >significant amount of concrete. Does anyone have references or

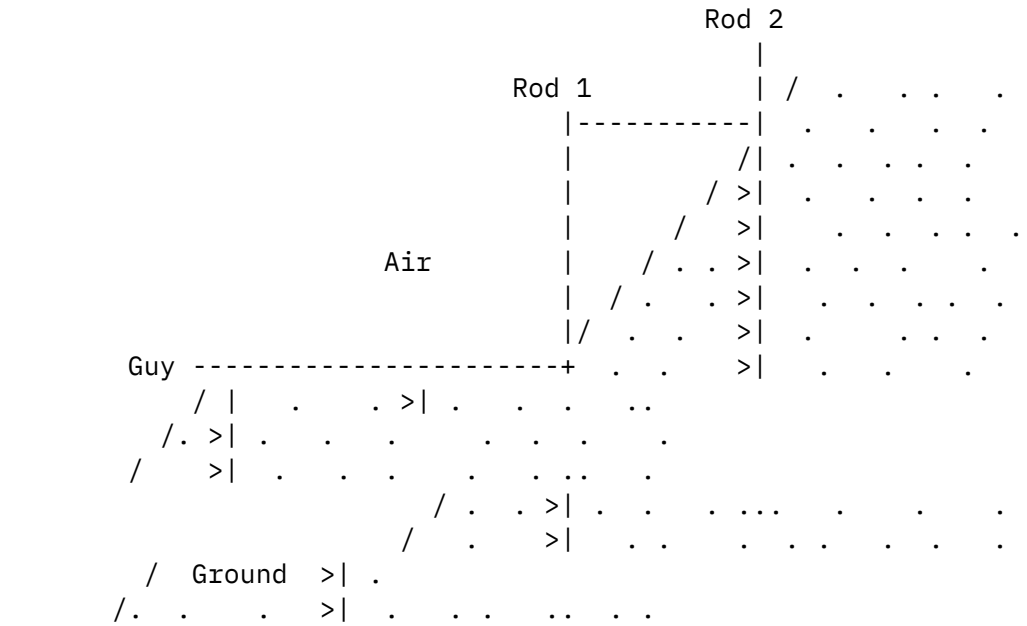
: >experience anchoring guys in other ways? Two ways I can think of
: >that _seem_ reasonable:
: >
: > -- A rod driven into the ground at a shallow angle so the guy
: >   tends to pull toward the ground, with a second rod
: >   driven a short distance further out and parallel to
: >   the first, to "guy" the top of the first rod. Should
: >   work well in compacted, undisturbed soil for fairly light
: >   loads.

: This is not a good plan. You want the anchor rod in tension since
: that's the way it's strongest. With this plan, it's the second
: guy anchor that's bearing most of the load while the prime anchor
: is just offering it's minimal bending resistance.

??

Maybe I didn't explain it well in words.

Tilt this about 45 degrees:



">" indicates reaction from the ground into which the rods are driven.
It doesn't take too much ground reaction to insure that most of the
load is on first rod, not the second. The second simply stiffens
the first...it's a significant addition, but certainly less than
half the load is borne by it. Did I miss something in your
comments on this one? Certainly tension is better than bending,
but with something like a 2" or 3" pipe for Rod 1, it becomes a
lot like a deadman made with pipe except you don't have to dig a

hole for it and it doesn't have as much ground to pull against.

Date: Sun, 21 Nov 1993 21:02:18 GMT
From: elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!asuvax!ncar!noao!stsci!
hodge@decwrl.dec.com
Subject: Tower Guy Anchors
To: ham-ant@ucsd.edu

In article <1993Nov19.152644.536@schbbs.mot.com>, CSLE87@maccvm.corp.mot.com
(Karl Beckman) writes:
|> I hate to have to interrupt your trains of thought to inject a bit of
|> reality here, but keep in mind that the third leg of the triangle is
|> the earth. When (other than CA earthquakes) was the last time you had
|> to adjust the length of your telephone drop wire or electric service
|> because the pole moved closer or further away from the house?? I've
|> heard that poles have jumped in front of cars, usually driven by well-
|> intoxicated drivers, but Ma Nature doesn't have to adjust its equatorial
|> belt by a notch or two as the seasons change.

I think you are correct that the ground does not expand or contract
with temperature changes, at least not in the horizontal direction.
The reason is that the temperature a few feet below the surface is
nearly constant throughout the year. If the ground warmed up throughout
the entire depth of the earth's crust during the summer, the horizontal
distance between objects fixed to the earth's surface would indeed
increase.

According to the CRC Handbook of Chemistry and Physics, the coefficient
of thermal expansion of steel is about 11 parts per million per degree
Celsius. I couldn't find dirt listed in their table (!).

So if the tower and cable are made of the same kind of steel, the cable
should be more slack in the summer, in contradiction with experience.
That suggests that the coefficient of expansion of the cable is smaller
than that of the tower.

Date: 23 Nov 1993 03:00:54 GMT
From: swrinde!sdd.hp.com!col.hp.com!news.dtc.hp.com!hpscit.sc.hp.com!
rkarlqu@network.ucsd.edu
To: ham-ant@ucsd.edu

References <9311221603.AA29813@huntsville.sparta.com>, <D>,
<1993Nov22.195048.1265@nntpd2.cxo.dec.com>
Subject : Re: helical antennas

It seems like there should be some way of feeding two helical antennas with the same amplitude but different phase such that the combination ends up being linear polarization. Has anyone heard of this being done? If so, how well does it work?

Rick Karlquist N6RK
rkarlqu@scd.hp.com

End of Ham-Ant Digest V93 #121
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